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SUPPLEMENTAL LYSINE IN FEED AND WATER FOR GROWING-FINISHING SWINE

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The effects of lysine in feed and water at comparable levels were studied when the level of crude protein was slightly lower than normally recommended for the respective weight of the pigs.

Experimental Procedure

Five experimental treatments of eight pigs each were used in this trial. Duroc and Yorkshire pigs, two barrows and two gilts of each breed, were equally represented in each treatment. The groups were assigned at random to each treatment. The treatments were:

Lot 1 - Basal ration
Lot 2 - Basal ration + 0.1% lysine in the feed
Lot 3 - Basal ration + 0.3% lysine in the feed
Lot 4 - Basal ration + low level of lysine in water (equivalent to 0.1% level in feed)
Lot 5 - Basal ration + high level of lysine in water (equivalent to 0.3% level in feed)

Experimental plans were made to compare the effects of feeding the same quantity of L-lysine hydrochloride in feed and water. Lysine was added to the basal ration at 0.1% or 0.3%. Feed consumption of these pigs was measured continuously and the quantity of lysine intake was calculated. The levels of lysine were adjusted in the water of the counterpart pens to maintain a similar lysine intake via the drinking water. The objective was an equal intake of supplemental lysine between the methods of feeding during the test period.

All pigs were self-fed the rations shown in table 1. The period of feeding each ration is also shown in the table. Water was provided ad libitum to all pigs. The pigs were kept on concrete in combination sleeping quarters and outside feeding pens. At 210 to 220 lb. body weight each pig was weighed off the trial individually and carcass information was obtained.

Results

Average daily gain was improved by a small margin (3.5%) by feeding either the lower or higher levels of lysine in the water in comparison to the control pigs or pigs fed an equivalent level of lysine in the feed (table 2). However, the difference in daily gain did not develop until near the end of the trial, which indicated that the effect on rate of gain was rather insignificant.

Table 1. Composition of Rations, Lb.

Feeding period	3 to 6 weeks of age	6 to 9 weeks of age	9 weeks to 75 lb.	75 to 150 lb.	150 lb. to end of trial
Crude protein, %	18	16	14	12	10
Shelled corn	390	540	843	890	930
Rolled oats	300	300	--	--	--
Soybean meal (50%)	130	130	128	80	40
Dried skimmilk	100	--	--	--	--
Sugar	50	--	--	--	--
Dicalcium phosphate	15	16	16	18	18
Limestone	5	6	5	3	3
T.M. salt	5	5	5	5	5
Trace mineral	0.5	0.5	--	--	--
Vitamin-antibiotic premix	a	a	b	b	b

[a] Provided 1135 I.U. vitamin A, 340 I.U. vitamin D, 4 mg. riboflavin, 8 mg. calcium pantothenate, 16 mg. niacin, 20 mg. choline chloride, 10 mcg. vitamin B_{12} and 1.13 gm. SP-250 per pound of ration.

[b] Provided 1135 I.U. vitamin A, 340 I.U. vitamin D, 2 mg. riboflavin, 4 mg. calcium pantothenate, 9 mg. niacin, 10 mg. choline chloride, 7 mcg. vitamin B_{12} and 5 mg. chlortetracycline per pound of ration.

Lysine in the feed and water appeared to have some effect on feed consumption and feed utilization. The control pigs ate more feed per day and required more feed per pound of gain than each of the four lysine-fed groups. Pigs ate the least quantity of feed per day on the water treatment, yet they had the fastest daily gains, therefore, these pigs were the more efficient in converting the feed to body weight. They required 14 and 35 lb. less feed per 100 lb. gain than pigs fed the same quantity of lysine in feed or the control pigs, respectively. The results of this trial suggested that putting lysine in water was superior to adding lysine in the feed. The lower levels of lysine in either the feed or the water appeared to be as effective as the higher levels. The performance of pigs on the two levels of lysine within each method of feeding lysine were similar, which lends more support to the differences observed in the treatments.

Lysine did not appear to have an effect on the carcass. Carcass length, backfat, loin eye area and percent ham and loin averages were similar between the treatment groups. Loin eye area was larger in the 0.1% lysine (feed) group, but one pig had a larger loin eye than all other pigs in the trial, which improved the average.

Table 2. Results of Lysine in the Feed or Water

Item	Control	Lysine in feed 0.1%	Lysine in feed 0.3%	Lysine in water (feed equivalent) 0.1%	Lysine in water (feed equivalent) 0.3%
Number of pigs	8	8	8	8	8
Av. initial wt., lb.	13.0	11.9	13.5	13.0	12.8
Av. final wt., lb.	214	206	211	214	213
Av. daily gain, lb.	1.42	1.39	1.41	1.47	1.48
Av. daily feed, lb.	4.63	4.32	4.39	4.26	4.28
Av. daily water, gal.	.86	.87	.85	.89	.86
Av. feed per lb. gain, lb.	3.25	3.11	3.11	2.89	2.90
Av. daily lysine, gm.	0	2.20	6.75	2.26	6.88
Carcass Data					
Av. carcass wt., lb.	153	148	150	154	153
Av. carcass length, in.	30.1	29.9	29.9	29.9	29.7
Av. backfat, in.	1.52	1.41	1.45	1.43	1.49
Av. loin eye area, sq. in.	4.51	4.85[a]	4.60	4.49	4.51
Av. percent ham and loin	37.3	38.7	38.4	37.5	37.1

[a] Largely due to one pig having a 6.07 sq. in. loin eye.